Megan Palmer's PBL Lesson: Plan & Design a City

- **Phase 1:** Entry event, driving question, how learners will collaborate in groups, community partner and their role, and how long you expect this project to last.
  Grade level/Subject: 4th grade Social Studies and Engineering
  Overarching goal/objective:
  1) I will learn and understand roles within a city management team.
  2) I will plan, design, and construct a layout for a new city.
  Driving Question: How can we, as city engineers, design a new city for our state of South Dakota that meets the needs of its residents?
  Entry Event:
  We will have a presentation by former City Engineer of Brookings, Jackie Lanning. Jackie was Brookings Chief City Engineer for the last 17 years and will share with us about her experience in city planning, lot layout, street design, zoning, and city codes. Jackie will then deliver a letter from the City of Brookings Engineering and Community Development Department requesting community planners to research, draft, and develop plans for a new city in South Dakota, directly neighboring our community of Brookings. Once students have received their design challenge, I will share the driving question as well as the culminating projects learners will create throughout this lesson.
  Project length and collaboration:
  This project will require about a week of background knowledge to be developed before launching the entry event. Once launched, the remainder of the project will last about 3-4 weeks. Learners will work in small groups often for this project, including during brainstorming, while forming essential questions, constructing the rough draft and summary of their city, and the final culminating product. Community partners will consist of former city engineer, Jackie Lanning, as well as members from the Brookings City Council, the department of engineering and community development, and a local general contractor. These partners will provide feedback to students throughout the project, as well as serve as the audience for the final culminating event.
- **Phase 2**: What learners need to know, understand, and be able to do to answer the driving question:
  -Research and recognize a functional overall physical layout of a city.
  -Understand the needs and desires of community members.
  -Establish essential and non-essential elements of their city by gathering feedback from their current community members.
  -Identify current design problems in their community and develop solutions to incorporate into their new city.
  -Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
  -Conduct short research projects that build knowledge through investigation of different aspects of a topic.
  -Draw evidence from literary or informational texts to support analysis, reflection, and research.
  - Critical thinking, creativity, collaboration, communication, self-management

- **Phase 3:** Describe the products learners will create and how their completion will assist them in building knowledge, understanding, and the skills needed to answer the driving question. Also describe how learners will have an opportunity to critique and revise their work throughout the project, as well as how technologies will be used to support student learning and work.
  -Essential questions of what is still needed to know will be listed on paper or Google Docs. This will be shared with classmates and their teacher. Findings must be discovered before the design process can begin. This will allow learners the opportunity to seek information they still need to know in order to make their projects successful.
  -Through class discussion, we will discuss city planning and view city design maps from our community of Brookings. We will then visit Google Earth to view Brookings' city layout and share our findings with peers for collaboration, feedback, and reflection. The use of Google Earth provides a technology-rich authentic experience for the learners to view their city in a unique and informational way they would not otherwise get without technology.
  -Using Padlet, learners will document their project journey by sharing ideas, sketches, photos, and reflections. This digital platform will allow for peer feedback and review as well as help other classmates with potential challenges or questions they may have within their own project. Learners can continue adding to their Padlet throughout the project and reflect and evaluate what they have added at the end of the project.
  -Gathered data from peer and community surveys requesting community needs using Poll Everywhere will allow learners to understand the needs of their community members as well as age-alike peers. This will assist learners in the needs and desires for their new city. Through the use of digital polling, learners will be able to easily record, track, and view data as well as continue to access it throughout their project.
  -A summary of their new city, including overall layout and what community needs will be addressed upon development based on the research they collected. City ordinances will also be developed and proposed within the summary. This allows learners to reflect on their project throughout, gather feedback from teachers and peers, and make changes to their final summary based on the feedback. This summary will be a part of their final product and will be shared with peers, teachers in their school, and a panel of experts.
  -Rough draft paper-based sketch of new city layout to be reviewed by teacher and peers (graphing paper provided for sketches). Learners will complete this in order to visualize their city and ensure it is logical and realistic. Reflections and revisions to the city sketch will be submitted to the teacher for feedback and allotted time for revisions if necessary.
  -Model of final city layout using digital platform of learners' choice; some examples are Microsoft Publisher or SketchUp, as well as a typed summary of their city plans and layout. This will be learners' final product, displaying their understanding and visions.
  -Once all projects are complete, learners will have a reflection period to determine what they have learned throughout their project. An exit ticket via Google Forms will allow me to find out what went well, what the challenges were, how they were solved, and what the learners felt most proud of after completing the project.

- **Phase 4:** How will learners present their products and address the driving question during the culminating event?
  The culminating event will consist of learners presenting their models as well as city summaries first to a local panel involving peers, teachers, and former city engineer, Jackie Lanning. Following this presentation, learners will receive and reflect on feedback and make any modification needed. A final digital presentation will then be shared with a city-wide panel of experts, made up of Jackie Lanning, Brookings City Mayor, members of the City of Brookings Engineering and Community Development Department, and a general contractor.
  After presentations, and at the end of the project, learners will be expected to look back at the products created throughout the project in order to reflect on their work as a group. Here, they will determine if they arrived at a satisfactory answer to the driving question and how their thinking had evolved from the start of the project.

- **Phase 5:** Describe how the teacher will manage and facilitate the unit so that students make progress throughout and achieve the intended learning goals.
  Over the course of 3-4 weeks during this project, I will provide regular check-ins and small group meetings to ensure learners are making progress and achieving the intended learning goals. I will provide modeling and scaffold student learning when needed, such as during whole class discussion, while forming essential questions, conducting research and data collection from other students and community members. After the entry event, learners will begin this project by exploring what they need to know before beginning. They will develop a list of essential questions, which will be discussed during our first group check in. I will assist the learners with questions they cannot find the answers to or clarifying any elements of the project learners still do not understand. I will regularly check in on student Padlet boards to see group progress and give feedback on steps of their designs when appropriate. Upon completion of city layout drafts and summaries of their city, I will conduct small group meetings to view learners' progress, give feedback, and assist with any further needs from the learners. Guided instruction will occur as learners begin their digital model on a creation platform of their choice. I will provide 2-3 options and scaffold student learning with each program. This will consist of whole class learning, and individualized instruction where needed. Learners will be offered assistance with the digital design tool they choose whenever needed throughout the project.
  Formative assessments will take place after the development of phase 2 and again at the end of the culminating event. I, along with city experts, will provide feedback after viewing learners' initial city summary and draft of their city layout. This will allow learners time for reflection and modifications to their projects, as needed. 21st century success skills will also be assessed via a rubric, norms developed as a class, learners' Padlet reflections, and the group's final culminating product.

Sources:
Brookings County Ordinances:
https://library.municode.com/sd/brookings/codes/code_of_ordinances
City Council Members:
https://cityofbrookings-sd.gov/75/City-Council
Community Development:
https://cityofbrookings-sd.gov/130/Community-Development
City Design Map of Brookings:
https://cityofbrookings-sd.gov/DocumentCenter/View/291/Zoning-District-Map?bidId=

LT 712: Instructional Technologies for Active Learning Course Final

Megan Palmer

First and foremost, much of the technology involved in my project is authentic and provides learners the opportunity to learn more about their city as well as the needs of a community and its members. Vygotsky's cognitive social mediated theory supports that individual development is largely connected with the social and cultural context in which a person is situated (P. 69, Spector, 2016). With technology resources such as Google Earth and Poll Everywhere, learners will gain valuable knowledge on what their community has to offer and hear from other members of their community on the needs and wants of their city. Vygotsky's theory also focuses on reaching a learners' zone of proximal development when teaching a concept or having students complete a task. Within this level of learning, students are actively engaged in their work. The technologies used in my project may at first require some teacher-led scaffolding, but as learners develop experience and background knowledge, they become more engaged and in charge of their learning and the information they are seeking through the use of these technologies.

Through technologies such as Google Earth, Padlet reflections, online research and data collection of our community, as well as creating a digital city model, learners are invested in real-life tasks that challenge them to discover the needs and desires of a new community. This includes elements the learners themselves feel their city should have. These technology-rich activities allow learners to develop questions and answers in the most authentic way possible. Spector states that Lave's situated learning theory entails "a great deal of learning occurring in everyday activities involving human action and performance. The relevant process in such learning is legitimate peripheral participation, which involves a learner moving from an

observer-only status (Google earth and essential questions), to a practitioner guided by others" (Poll everywhere, rough draft city layout) (P. 81, Spector, 2016).

Overall, my project is technology-rich in many aspects and the learning theory from Spector's text that best encompasses the project in its entirety is Kolb's experiential learning theory. As our text supports, "First, comes an experience. Then the learner naturally observes and reflects on that experience. The learner then forms concepts and perhaps rules based on how the experience has been filtered and understood by observation and reflection processes. Finally, a learner tries out this new understanding in novel situations" (P. 81, Spector, 2016). The experience of Mrs. Lanning's presentation and her design challenge for my learners will allow them to observe and build excitement. Based on these experiences, learners will research and develop what their city needs through a variety of technology-rich applications. They will then use this knowledge to reflect and determine what exactly their new city needs. They will use all background experiences to create their new city model as well as a description of what it will encompass. The experiential learning theory allows room for support from teachers, peers, or other adults as needed, which learners will most likely need during my PBL experience.

The two biggest barriers to successfully implementing my project are the complexity of some technologies involved and the time management of the project. Although the overall project goal for learners to act as design engineers to create a new city is quite simple, there are many components and activities embedded into my project. Every phase of my Gold Standard PBL project contains at least one technology-rich activity. While this will give my lesson a turbo boost and elicit engagement and active learning, it could potentially confuse or overwhelm learners or take away from the overall driving question to be answered. Page 131 of our Larmer text offers questions to guide planning of a PBL project. Two questions I will need to ask before

implementing this lesson are, “What are the key learning goals you want students to achieve?” and “Are you taking advantage of your students’ digital skills?”

“Focus on learning goals first, rather than planning a project around the latest tech tool (Larmer, 2015). Upon development of learners’ essential questions, if learners are not ready for some of the technology based activities, I will guide them to other ways to achieve their goals, as well as demonstrate their knowledge of the process. The Larmer text also suggests surveying students to find out the level of expertise with technology prior to the project (P. 131, Larmer, 2015). This is a great way to determine their zone of proximal development in order to scaffold their learning. Learners knowledgeable in certain technologies can be peer mentors to those that are not as comfortable with the skill.

“Sometimes the subject matter dictates a project’s length and complexity” (P. 79, Larmer, 2015). Due to the nature of many planned activities throughout my lesson, this project could potentially take longer than anticipated to complete which could cause conflict to the city members involved in giving learners feedback and viewing the culminating event presentations. To ensure a successful timeline for the project, I will provide a student planning calendar to map out expectations and deadlines for completion of activities. Learners will have regular check-ins with me for progress updates and any assistance needed to stay on track. Perhaps enlisting the help of another content teacher to facilitate some of the project activities would help learners best utilize their time in order to stay on pace.

As a teacher leader in my school community, I can encourage my colleagues to practice technology-rich active learning through modeling techniques that are effective in my own classroom, offering hands-on, interactive training, and acting as a support system to those interested in learning more. Teachers are similar to students when it comes to learning; they learn

best when the content is engaging, authentic, useful to them. My building is made up of a variety of learning styles and comfort levels when it comes to technology. By modeling to those very new to technology-rich active learning, they will be able to see the resources in action and reflect on how they could best utilize these methods in their own classroom. They then have the opportunity to ask questions and seek answers before implementing these strategies on their own.

By offering a TPACK-related pedagogical content knowledge method of training, teachers will experience instructional modeling, peer coaching, and collaborative development allowing them to see the resources in action as well as getting time to work with the technologies on their own, both with peers and individually (P. 194, Herring, 2016). Training offered will be engaging and hands-on so teachers connect with and invest in the resources. I will offer opportunities for teachers to request training on specific resources that meet their needs and desires. We will act as a team when planning training sessions and work through feedback and reflection as a group. Page 45 of our Spector text states, "Adults often bring to a learning situation a wide variety of backgrounds and experiences with the expectation that some of it will be acknowledged and useful when learning something new. Adults are especially interested in planning their own learning trajectories and negotiating particular learning goals insofar as that is possible" (Spector, 2016).

Finally, by acting as the team leader for a professional learning community I will provide support to teachers as they implement new technology-rich lessons into their curriculum. "Strong professional learning communities also contribute to teachers' instructional improvement (Borko, 2004). While participating in such communities when initiated and sustained through TPACK-based PDs, teachers interact, collaborate, and share" (P. 281, Herring, 2016). A PLC that meets one to two times per month throughout the length of the school year

would serve as the most effective method to offer support and guidance to teachers wanting to improve their technology-rich active learning practices.

Sources:

Herring, M, Koehler, M, and Mishra, P. *Handbook of Technological Pedagogical Content Knowledge (TPACK) for Educators.* New York, NY, Routledge, 2016.

Larmer, John, Mergendoller, J, and Boss, S. *Setting the Standard for Project Based Learning.* Alexandria, VA, ASCD, 2015.

Spector, Michael. *Foundations of Educational Technology: Integrative Approaches and Interdisciplinary Perspectives.* New York, NY, Routledge, 2016.